

# **JOEL AARON HUROWITZ**

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4800 Oak Grove Dr., M/S 183-501, Pasadena, CA 91109  
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<b>EDUCATION:</b>	<b>State University of New York at Stony Brook</b>	
	Ph.D. in Geosciences	<b>2006</b>
	<u>Dissertation:</u> Weathering Processes and Soil Geochemistry on Mars	
	<u>Advisor:</u> Dr. Scott M. McLennan	
	<b>State University of New York at Stony Brook</b>	
	M.S. in Earth and Space Sciences	<b>2001</b>
	<u>Thesis:</u> The Geochemical and Nd-Isotopic Evolution of the Eastern Margin of North America in New England: Late Proterozoic to Middle Ordovician	
	<u>Advisor:</u> Dr. Scott M. McLennan	
	<b>State University of New York at Albany</b>	
	B.S. in Geology	<b>1996</b>
<b>EMPLOYMENT:</b>		
<b>Director's Fellow</b>		<b>Nov. 2007-Present</b>
NASA-Jet Propulsion Laboratory		
<b>Caltech Postdoctoral Scholar at the Jet Propulsion Laboratory</b>		<b>2006-2007</b>
<u>Advisor:</u> Dr. Albert S. Yen (JPL)		
<b>Hydrogeologist</b>		<b>1996-1998</b>
<i>Leggette, Brashears &amp; Graham, Inc., White Plains, New York</i>		
Duties: Management of remedial activities at landfill and petroleum contaminated sites, aquifer supply testing, preparation of 3 <sup>rd</sup> party feasibility studies for Superfund site remediation.		
<b>PROFESSIONAL APPOINTMENTS:</b>		
<b>Athena Science Team Member, Mars Exploration Rover Mission</b>		<b>2004-Present</b>
Duties: Chairperson of the Science Operations Working Group (SOWG), Microscopic Imager/Engineering Camera Payload Uplink Lead, SOWG Documentarian, Long-Term Planning Lead, and Soil and Rock Physical Properties Theme Group Lead		
<b>PROFESSIONAL ACTIVITIES:</b>		
NASA Proposal Review Panelist and External Reviewer		
Reviewer: <i>GCA, Icarus, JGR-Planets, JGR-Biogeosci., Geol. Mag., GRL</i>		
Session Co-Convenor: American Geophysical Union Fall Meeting		<b>2007</b>
Emission Spectrometer Laboratory Manager		<b>2001-2006</b>
NASA-JPL Planetary Sciences Summer School		<b>2004</b>
Session Chair, American Geophysical Union Fall Meeting		<b>2001</b>
Geochemist's Workbench Training Seminar		<b>2001</b>
Thermal Ionization Mass Spectrometer Laboratory Manager		<b>1999-2001</b>
Intern, New York State Geological Survey		<b>1994-1996</b>
<b>EDUCATION &amp; PUBLIC OUTREACH:</b>		
<b>Undergraduate Research Mentor</b>		<b>2005-2006</b>
Project: Aqueous alteration of Clovis Class rocks from Gusev Crater, Mars		
<b>Honors College, Stony Brook University</b>		<b>2006</b>
Invited Lecturer: Anatomy of a Planetary Science Mission		
<b>Arrowhead Elementary School, East Setauket, New York</b>		<b>2005-2006</b>
Designed and taught lessons and activities centered on the Mars Exploration Rover Mission for 3rd and 4 <sup>th</sup> Grade Students		
<b>John's Hopkins University Center for Talented Youth</b>		<b>2004</b>
Co-Presented Lecture: Spirit & Opportunity on Mars: The Stony Brook Connection		
<b>Teaching Assistant</b>		<b>1998-1999</b>
Independently taught "Introductory Physical Geology Lab" for two semesters		

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## **HONORS AND AWARDS:**

- NASA Group Achievement Award for the Mars Exploration Rover Second Extended Mission Team **2005**
- NASA Group Achievement Award for the Mars Exploration Rover First Extended Mission Team **2004**
- Selected to Attend NASA Planetary Sciences Summer School, Pasadena, CA **2004**
- Honorable Mention, Stephen E. Dwornik Planetary Geoscience Student Paper Award **2004**  
*35<sup>th</sup> Lunar and Planetary Science Conference, Houston, TX*
- NASA Sponsored Student, 6<sup>th</sup> International Mars Conference, Pasadena, CA **2003**
- Department of Geosciences Excellence in Teaching Award **1999**

## **INVITED TALKS:**

- Keynote Speaker, “Surface Geochemistry and Processes on Mars”, Goldschmidt Conference, 2008
- California Institute of Technology, Kliegel Lecture in Planetary Sciences, April 1, 2008
- NASA-JPL, Planetary Science and Life Detection Section Colloquium, July 17, 2007
- Stony Brook University, Department of Geosciences Colloquium, April 24, 2007

## **PRESS ARTICLES & INTERVIEWS:**

- Feature article: “Martian dust may be hazardous to your health” in “Breaking News” section of New Scientist magazine, March 19<sup>th</sup>, 2007. Written by Jeff Hecht.
- Interviewed for article: “Don’t drink the Mars water” in “The Explainer” section of Slate.com online newspaper, December 8<sup>th</sup>, 2007. Written by Daniel Engber.

## **PROFESSIONAL ASSOCIATIONS:**

Geochemical Society, American Geophysical Union

## **PRIMARY RESEARCH INTERESTS:**

- Planetary geology, planetary exploration
- Sedimentary geochemistry
- Mineral surface reactivity and toxicity (medical geology/biogeochemistry)
- Aqueous geochemistry (experimental/theoretical)
- Trace element and isotope geochemistry
- Analytical chemistry

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## **PUBLICATIONS (SUBMITTED):**

1. **Hurowitz, J.A.**, Wyatt, M.B., Taylor, G.J., McLennan, S.M., Milliken, R.E. (submitted), A global perspective on Martian chemical weathering.
2. Schmidt, M.E., Farrand, W.H., Johnson, J.R., Schröder, C., **Hurowitz, J.A.**, McCoy, T.J., Ruff, S.W., Arvidson, R.E., DesMarais, D.J., Lewis, K.W., Ming, S.W., Squyres, S.W., deSouza Jr., P.A. (submitted), Spectral, mineralogical, and geochemical variations across Home Plate, Gusev Crater, Mars indicate high and low temperature alteration, *Journal of Geophysical Research*.

## **PUBLICATIONS (IN PRESS):**

3. **Hurowitz, J.A.**, Tosca, N.J., Dyar, M.D. (in press), Acid production by  $\text{FeSO}_4 \cdot n\text{H}_2\text{O}$  dissolution and implications for terrestrial and martian aquatic systems, *American Mineralogist*.
4. Farrand, W.H., Bell III, J.F., Johnson, J.R., Arvidson, R.E., Crumpler, L., **Hurowitz, J.A.**, Schröder, C. (in press), Rock spectral classes observed by the Spirit rover's Pancam on the Gusev Crater Plains and in the Columbia Hills, *Journal of Geophysical Research*.

## **PUBLICATIONS (2008):**

5. Arvidson, R.E., Ruff, S.W., Morris, R.V., Ming, D.W., Crumpler, L.S., Yen A.S., Squyres, S.W., Sullivan, R.J., Bell III, J.F., Cabrol, N.A., Clark, B.C., Farrand, W.H., Gellert, R., Greenberger, R., Grant, J.A., Guinness, E.A., Herkenhoff, K.E., **Hurowitz, J.A.**, Johnson, J.R., Klingelhofer, G., Lewis, K.W., Li, R., McCoy, T.J., Moersch, J., McSween, H.Y., Murchie, S.L., Schmidt, M., Schroder, C., Wang, A., Wiseman, S., Madsen, M.B., Goetz, W., McLennan, S.M. (2008) Spirit Mars rover mission to the Columbia Hills, Gusev Crater: Mission overview and selected results from the Cumberland Ridge to Home Plate, *Journal of Geophysical Research*, 113, E12S33, doi:10.1029/2008JE003183, 2008.
6. Yen, A.S., Morris, R.V., Clark, B.C., Gellert, R., Knudson, A.T., Squyres, S.W., Mittlefehldt, D., Ming, D.W., Arvidson, R.E., McCoy, T., Schmidt, M., **Hurowitz, J.A.**, Li, R., Johnson, J.R. (in press), Hydrothermal processes at Gusev Crater: An evaluation of Paso Robles Class soils, *Journal of Geophysical Research*, 113, E06S10, doi:10.1029/2007JE002978, 2008.

## **PUBLICATIONS (2007):**

7. **Hurowitz, J.A.** and McLennan, S.M. (2007) A ~3.5Ga record of water-limited, acidic weathering conditions on Mars, *Earth and Planetary Science Letters*, 260, 432-443.
8. **Hurowitz, J.A.**, McLennan, S.M., Schoonen, M.A.A., Tosca, N.J., (2007), Production of hydrogen peroxide in martian and lunar soils, *Earth and Planetary Science Letters*, 255, 41-52.

## **PUBLICATIONS (2006):**

9. **Hurowitz, J.A.**, McLennan, S.M., McSween, H.Y., Jr., DeSouza, P.A., Jr., Klingelhofer, G. (2006) Mixing relationships and the effects of secondary alteration in the Wishstone and Watchtower classes of Husband Hill, Gusev Crater, Mars, *Journal of Geophysical Research*, 111, E12S14, doi:10.1029/2006JE002795.
10. **Hurowitz, J.A.**, McLennan, S.M., Tosca, N.J., Arvidson, R.E., Michalski, J.R., Ming, D.W., Schroeder, C., Squyres, S.W. (2006) In-situ and experimental evidence for acidic weathering on Mars, *Journal of Geophysical Research*, 111, E02S19, doi:10.1029/2005JE002515
11. Squyres, S.W., Arvidson, R.E., Clark, B.C., Bell III, J.F., Crumpler, L.S., Farrand, W.H., Gorevan, S., Herkenhoff, K.E., **Hurowitz, J.A.**, McSween, H.Y., Ming, D.W., Morris, R.V., Ruff, S.W., Wang, A., Yen, A. (2006) The rocks of the Columbia Hills, *Journal of Geophysical Research*, 111, No. E2, E02S16, doi:10.1029/2005JE002562
12. Wang, A., Haskin, L.A., Squyres, S.W., Arvidson, R.E., Jolliff, B.L., Crumpler, L., Gellert, R., Schroeder, C., Herkenhoff, K., **Hurowitz, J.A.**, Tosca, N.J., Farrand, W., Anderson, R.C. (2006) Sulfate deposition in subsurface regolith exposed in trenches at the plains traversed by the Spirit rover in Gusev Crater, Mars. *Journal of Geophysical Research*, 111, No. E2, E02S16, doi:10.1029/2005JE002513
13. Wang, A., Korotev, R.L., Jolliff, B.L., Haskin, L.A., Crumpler, L., Farrand, W., Herkenhoff, K.E., de Souza, P., Kusack, A.G., **Hurowitz, J.A.**, Tosca, N.J. (2006) Evidence for phyllosilicate in

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- Wooly Patch, an altered rock encountered at West Spur, Columbia Hills by Spirit Rover. *Journal of Geophysical Research*, 111, No. E2, E02S16, doi:10.1029/2005JE002516
14. Arvidson, R.E., Squyres, S.W., Anderson, R.C., Bell, J.F. III, Brückner, J., Cabrol, N.A., Calvin, W.M., Carr, M., Christensen, P.R., Clark, B.C., Crumpler, L.S., Des Marais, D.J., d'Uston, C., Economou, T., Farmer, J.D., Farrand, W.H., Folkner, W.M., Golombek, M., Gorevan, S., Grant, J., Greeley, R., Grotzinger, J., Guinness, E., Hahn, B.C., Haskin, L.A., Herkenhoff, K.E., **Hurowitz, J.A.**, Hviid, S., Johnson, J.R., Klingelhöfer, G., Knoll, A., Landis, G., Leff, C., Lemmon, M., Li, R., Madsen, M., Malin, M.C., McLennan, S.M., McSween, H.Y., Ming, D., Moersch, J., Morris, R.V., Parker, T.J., Rice, J., Richter, L., Rieder, R., Rodionov, D., Schröder, C., Sims, M., Smith, M., Smith, P., Soderblom, L.A., Sullivan, R., Thompson, S., Tosca, N.J., Wang, A., Wänke, H., Ward, J., Wdowiak, T., Wolff, M., Yen, A.S. (2006) Overview of the Spirit Mars Exploration Rover Mission to Gusev Crater: Landing Site to the Methuselah Outcrop in the Columbia Hills, *Journal of Geophysical Research*, 111, E02S01, doi:10.1029/2005JE002499

## PUBLICATIONS (2005):

15. **Hurowitz, J.A.**, McLennan, S.M., Lindsley, D.H., Schoonen, M.A.A. (2005) Experimental epithermal alteration of synthetic Los Angeles meteorite: Implications for the origin of Martian soils and identification of hydrothermal sites on Mars, *JGR-Planets*, 110, E07002, doi:10.1029/2004JE002391, 2005
16. **Hurowitz, J.A.** and McLennan, S.M. (2005) Geochemistry of Cambro-Ordovician sedimentary rocks of the northeastern USA: Changes in sediment sources at the onset of Taconian orogenesis, *Journal of Geology*, 113, 571-587
17. Tosca, N.J., McLennan, S.M., Clark, B.C., Grotzinger, J.P., **Hurowitz, J.A.**, Knoll, A.H., Schröder, C., Squyres, S.W. (2005) Geochemical modeling of evaporation processes on Mars: Insight from the sedimentary record at Meridiani Planum, *Earth and Planetary Science Letters*, 240 (1), 122-148
18. McLennan, S.M., Bell III, J.F., Calvin, W.M., Christensen, P.R., Clark, B.C., deSouza, P.A., Farmer, J.D., Farrand, W.H., Fike, D., Gellert, R., Ghosh, A., Glotch, T.D., Grotzinger, J.P., Hahn, B.C., Herkenhoff, K.E., **Hurowitz, J.A.**, Johnson, J.R., Joliff, B.L., Klingelhofer, G., Knoll, A.H., Learner, Z.A., Malin, M.C., McSween, H.Y., Pocock, J., Ruff, S.W., Soderblom, L.A., Squyres, S.W., Tosca, N.J., Watters, W., Wyatt, M.B., Yen, A., (2005) Provenance and diagenesis of the Burns Formation, Meridiani Planum, Mars, *Earth and Planetary Science Letters*, 240 (1), 95-121
19. Crumpler, L.S., Squyres, S.W., Arvidson, R.E., Bell, J.F. III, Blaney, D., Cabrol, N.A., Christensen, P.R., DesMarais, D.J., Farmer, J.D., Fergason, R., Golombek, M.P., Grant, F.D., Grant, J.A., Greeley, R., Hahn, B.C., Herkenhoff, K.E., **Hurowitz, J.A.**, Knudson, A.T., Landis, G.A., Li, R., Maki, J., McSween, H.Y., Ming, D.W., Moersch, J.E., Payne, M.C., Rice, J.W., Richter, L., Ruff, S.W., Sims, M., Thompson, S.D., Tosca, N.J., Wang, W., Whelley, P., Wright, S.P., Wyatt, M.B. (2005) MER Geologic Traverse Science by the Spirit Rover in the Plains of Gusev Crater, Mars, *Geology*, 33(10), 809-812
20. Yen, A.S., Gellert, R., Schröder, C., Morris, R.V., Bell III, J.F., Knudson, A.T., Clark, B.C., Ming, D.W., Crisp, J.A., Arvidson, R.E., Blaney, D.L., Brückner, J., Christensen, P.R., DesMarais, D.J., deSouza Jr., P.A., Economou, T.E., Ghosh, A., Hahn, B.C., Herkenhoff, K.E., Haskin, L.A., **Hurowitz, J.A.**, Joliff, B.L., Johnson, J.R., Klingelhöfer, G., Madsen, M.B., McLennan, S.M., McSween, H.Y., Richter, L., Rieder, R., Rodionov, D., Soderblom, L.A., Squyres, S.W., Tosca, N.J., Wang, A., Wyatt, M.B., Zipfel, J. (2005) An integrated view of the chemistry and mineralogy of martian soils, *Nature*, 436, doi:10.1038/nature03637
21. Haskin, L.A., Wang, A., Jolliff, B.L., McSween, H.Y., Clark, B.C., Des Marais, D.J., McLennan, S.M., Tosca, N.J., **Hurowitz, J.A.**, Farmer, J.D., Yen, A.S., Squyres, S.W., Arvidson, R.E., Klingelhöfer, G., Schröder, C., de Souza Jr., P.A., Ming, D.W., Gellert, R., Zipfel, J., Brückner, J., Bell III, J.F., Herkenhoff, K.E., Christensen, P.R., Ruff, S.W., Blaney, D.L., Gorevan, S., Cabrol, N.A., Crumpler, L.S., Grant, J.A., Soderblom, L.A., (2005) Water alteration of rocks and soils on Mars at the Spirit rover site in Gusev Crater, *Nature*, 436, doi:10.1038/nature03640

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## **PUBLICATIONS (2004):**

22. Bock, B., **Hurowitz, J.A.**, McLennan, S.M., Hanson, G.N. (2004) Scale and timing of rare earth element redistribution in the Taconian foreland of New England, *Sedimentology*, 51(4), 885-897

## **BOOK CHAPTERS:**

1. McLennan, S.M., Bock, B., Hemming, S.R., **Hurowitz, J.A.**, Lev, S.M., McDaniel, D.K. (2003) The roles of provenance and sedimentary processes in the geochemistry of sedimentary rocks. *Geochemistry of Sediments and Sedimentary Rocks: Evolutionary Considerations to Mineral Deposit-Forming Environments*. Lentz, D.R., Ed. St.John's: Geological Association of Canada, 192 pp.

## **WHITE PAPERS:**

1. MEPAG ND-SAG (2008). Science Priorities for Mars Sample Return, Unpublished white paper, 70 p, posted March 2008 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>. Contributor to MEPAG Goal II analysis.

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## **ABSTRACTS (2008):**

1. **Hurowitz, J.A.** (2008), A ~3.5By record of water-limited, acidic weathering on Mars, *Goldschmidt Conference*, Vancouver, B.C. **Keynote Address**.

## **ABSTRACTS (2007):**

2. **Hurowitz, J.A.** and Yen, A.S. (2007), Laboratory measurements of oxygen gas release from basaltic minerals exposed to ultraviolet radiation: Implications for the Viking Gas Exchange experiments, *American Geophysical Union Fall Meeting*, San Francisco, CA
3. Yen, A.S., Ming, D.W., Morris, R.V., Clark, B.C., Gellert, R., **Hurowitz, J.A.** (2007), Silica deposits within Gusev Crater: Clear evidence for Martian water, *American Geophysical Union Fall Meeting*, San Francisco, CA
4. Taylor, G.J., Stopar, J.D., **Hurowitz, J.A.**, McLennan, S.M., Boynton, W.V., Wyatt, M.B., Baloga, S.M. (2007), A view of Martian weathering from microns to hundreds of kilometers, *Goldschmidt 2007*, Cologne, Germany
5. **Hurowitz, J.A.**, Taylor, G.J., Wyatt, M.B., McLennan, S.M., Yen, A.S., Boynton, W.V. (2007) A global view of Martian weathering based on lander, GRS, and MGS-TES data, In *7<sup>th</sup> International Conference on Mars*
6. Yen, A.S., Clark, B.C., Gellert, R., Morris, R.V., **Hurowitz, J.A.** (2007) Zinc as an indicator of alteration at the Martian surface, In *7<sup>th</sup> International Conference on Mars*
7. Farrand, W.H., Rice, J., Glotch, T.G., **Hurowitz, J.A.** (2007) Hyperspectral, multi-spectral, and textural analyses of the Mawrth Vallis layered terrain, In *7<sup>th</sup> International Conference on Mars*
8. **Hurowitz, J.A.**, Yen, A.S., Kim, S. (2007) Experimental constraints on oxygen gas release and mobility of adsorbed superoxide in Martian soils, In *Lunar and Planetary Science XXXVIII*, Abstract #2041, Lunar and Planetary Institute, Houston (CD-ROM)

## **ABSTRACTS (2006):**

9. **Hurowitz, J.A.**, McLennan, S.M., Yen, A.S. (2006) A comparison of chemical weathering styles on Earth and Mars, *American Geophysical Union Fall Meeting*, San Francisco, CA
10. Yen, A.S., Clark, B.C., **Hurowitz, J.A.** (2006) Decomposition of organic compounds at the Martian surface, *American Geophysical Union Fall Meeting*, San Francisco, CA
11. McLennan, S.M., Grotzinger, J.P., **Hurowitz, J.A.**, Tosca, N.J. (2006) Sulfate geochemistry and the sedimentary rock record of Mars, *Workshop on Martian Sulfates as Recorders of Atmospheric-Fluid-Rock Interactions*, Lunar and Planetary Institute, Houston
12. Lewis, J., **Hurowitz, J.A.**, McLennan, S.M. (2006) Aqueous alteration of Clovis Class Mars rocks from Gusev Crater, *Undergraduate Research and Creative Activity Conference*, Stony Brook, NY
13. **Hurowitz, J.A.**, McLennan, S.M., and the Athena Science Team (2006) Geochemical mixing relationships between bedrock lithologies on Husband Hill, Gusev Crater, Mars In *Lunar and Planetary Science XXXVII*, Abstract #1621, Lunar and Planetary Institute, Houston (CD-ROM)

## **ABSTRACTS (2005):**

14. **Hurowitz, J.A.**, McLennan, S.M., and the Athena Science Team (2005) Weathering of rocks and soils on Mars, *Geological Society of America, Annual Meeting*, Salt Lake City, UT
15. **Hurowitz, J.A.**, Tosca, N.J., McLennan, S.M., and the Athena Science Team (2005) Experimental basalt alteration at low-pH: Implications for weathering relationships on Mars, In *Lunar and Planetary Science XXXVI*, Abstract #2025, Lunar and Planetary Institute, Houston (CD-ROM)
16. **Hurowitz, J.A.**, Tosca, N.J., McLennan, S.M., and Schoonen, M.A.A. (2005) Mechanically produced radical species at silicate surfaces and the oxidant in Martian soils, In *Lunar and Planetary Science XXXVI*, Abstract #1991, Lunar and Planetary Institute, Houston (CD-ROM)
17. Korotev, R.L., Wang, A., Jolliff, B.L., Crumpler, L., Farrand, W.H., Herkenhoff, K.E., de Souza, P., Kusack, A.G., **Hurowitz, J.A.**, Tosca, N.J. (2005) Phyllosilicates in Wooly Patch outcrop investigated by Spirit Rover at West Spur, Gusev Crater. *Geological Society of America, Annual Meeting*, Salt Lake City, UT
18. McLennan, S.M., **Hurowitz, J.A.**, Tosca, N.J. (2005) Surficial processes on a basaltic planet. *18<sup>th</sup> Kongsbergseminar, The patterns of wet planets*

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19. McLennan, S.M., Bell III, J.F., Calvin, W.M., Christensen, P.R., Clark, B.C., deSouza, P.A., Farrand, W.H., Fike, D., Gellert, R., Ghosh, A., Glotch, T.D., Grotzinger, J.P., Hahn, B.C., Herkenhoff, K.E., **Hurowitz, J.A.**, Johnson, J.R., Johnson, S.S., Joliff, B.L., Klingelhöfer, G., Knoll, A.H., Learner, Z.A., Malin, M.C., McSween, H.Y., Pocock, J., Ruff, S.W., Squyres, S.W., Tosca, N.J., Watters, W., Wyatt, M.B., Yen, A., and the Athena Science Team (2005) Provenance and diagenesis of impure evaporitic sedimentary rocks on Meridiani Planum, Mars, In *Lunar and Planetary Science XXXVI*, Abstract #1884, Lunar and Planetary Institute, Houston (CD-ROM)
20. Tosca, N.J., McLennan, S.M., Clark, B.C., Grotzinger, J.P., **Hurowitz, J.A.**, Knoll, A.H., Schröder, C., Squyres, S.W., and the Athena Science Team (2005) Geochemical modeling of evaporites on Mars: Insight from Meridiani Planum, In *Lunar and Planetary Science XXXVI*, Abstract #1724, Lunar and Planetary Institute, Houston (CD-ROM)
21. Wang, A., Haskin, L.A., Squyres, S.S., Arvidson, R.E., Crumpler, L.S., Gellert, R., **Hurowitz, J.A.**, Schroder, C., Tosca, N.J., Herkenhoff, K.E., Joliff, B.J., and the Athena Science Team (2005) Sulfate deposition in regolith exposed in trenches on the plains between Spirit landing site and Columbia Hills in Gusev Crater, Mars, In *Lunar and Planetary Science XXXVI*, Abstract #2236, Lunar and Planetary Institute, Houston (CD-ROM)

## ABSTRACTS (2004):

22. **Hurowitz, J.A.**, Tosca, N.J., McLennan, S.M., Lindsley, D.H., Schoonen, M.A.A. (2004) A reappraisal of adsorbed superoxide ion as the cause behind the reactivity of the Martian soils, In *Lunar and Planetary Science XXXV*, Abstract #1699, Lunar and Planetary Institute, Houston (CD-ROM). **Dwornik Award Honorable Mention**.
23. Schoonen, M.A.A., Strongin, D.R., Cohn, C.A., Smirnov, A., Laffers, R., **Hurowitz, J.A.**, Michel, F.M., Mueller, S., Wimmer, E., Leifer, N.D., Grey, C.P., (2004) Reactivity of defects on mineral surfaces: A multidisciplinary approach, *Proceedings from the 228<sup>th</sup> National Meeting of the American Chemical Society*, Philadelphia, PA
24. Arlaukas, S.M., **Hurowitz, J.A.**, Tosca, N.J., McLennan, S.M. (2004) Iron-oxide weathering in sulfuric acid: Implications for Mars, In *Lunar and Planetary Science XXXV*, Abstract #1868, Lunar and Planetary Institute, Houston (CD-ROM)
25. Tosca, N.J., **Hurowitz, J.A.**, Meltzer, L., McLennan, S.M., Schoonen, M.A.A. (2004) Olivine weathering on Mars: Getting back to basics, In *Lunar and Planetary Science XXXV*, Abstract #1043, Lunar and Planetary Institute, Houston (CD-ROM)

## ABSTRACTS (2003):

26. **Hurowitz, J.A.**, McLennan, S.M., Lindsley, D.H., Schoonen, M.A.A. (2003) The hydrothermal soil formation mechanism: relevant conditions and implications of experimental results, *6<sup>th</sup> International Mars Conference*, Pasadena, CA
27. **Hurowitz, J.A.**, McLennan, S.M., Lindsley, D.H., Schoonen, M.A.A. (2003) Hydrothermal alteration of the Martian crust: an experimental approach, In *Lunar and Planetary Science XXXIV*, Abstract #1781, Lunar and Planetary Institute, Houston (CD-ROM)

## ABSTRACTS (1997-2002):

28. N. J. Tosca, **J. A. Hurowitz**, S. M. McLennan, D. H. Lindsley, M. A. A. Schoonen (2002) Surficial processes on Mars: An experimental approach, In *Lunar and Planetary Science XXXIII*, Abstract #1354, Lunar and Planetary Institute, Houston (CD-ROM)
29. **Hurowitz, J.A.** and McLennan, S.M. (2001) Trace element and Nd-isotopic evolution of eastern Laurentia in New England: Late Proterozoic to middle Ordovician, *American Geophysical Union Fall Meeting*, San Francisco, CA
30. **Hurowitz, J.A.** and McLennan, S.M. (2000) Neodymium isotopic evolution of the eastern margin of Laurentia: Rifting to the Taconian orogeny, *Geological Society of America, 35<sup>th</sup> Annual Meeting, Northeastern Section*, New Brunswick, NJ.
31. Isachsen, Y.A., Gerhard, D.A., **Hurowitz, J.A.** (1997) Digital map of Adirondack dikes, *Geological Society of America, 32<sup>nd</sup> Annual Meeting, Northeastern Section*, King of Prussia, PA